

**Map 9-1. Davis County**

## **Part IX. Davis County**

With a total area of 630 square miles and only 223 square miles of usable land, Davis County is the second smallest county in Utah. Antelope Island in the Great Salt Lake adds another 42 square miles to the land area with the remaining portion part of the Great Salt Lake. Davis County is the third most populous county in the state with a population density of roughly 933 people per square mile. Morgan County bounds the county to the east, Salt Lake County to the south, Tooele County to the west, and to the north, Weber County. The western half of Davis County consists of the Great Salt Lake, while the eastern edge of the County is the front of the Wasatch Mountains, much of that in the Wasatch National Forest.

Davis County includes 15 municipalities: Bountiful, Centerville, Clearfield, Clinton, Farmington, Fruit Heights, Kaysville, Layton, North Salt Lake, South Weber, Sunset, Syracuse, West Bountiful, West Point, and Woods Cross. Unincorporated areas with significant populations are limited to Hill Air Force Base, the Val Verda area between the communities of North Salt Lake and Bountiful and the Mutton Hollow area between Kaysville and Layton. The percent of land ownership within the county is 10.9% Federal, 12.0% State, 24.9% Private and Local Government, and 52.2% under the Great Salt Lake (also owned by the State).

Most of the early settlers in Davis County were ranchers and farmers. The fertile ground produced sugar beets, tomatoes, alfalfa, grain, corn, potatoes, onions and extensive fruit orchards were developed on the bench areas. Cattle ranching and dairy farming were also leading agricultural activities.

As the county population continued to grow, Davis County developed a commercial and industrial base. The military became an important part of the County economy with the development of the Naval

Supply Depot and Hill Air Force Base. The Naval Supply Depot was sold to private developers in the 1960's and it became the Freeport Center, which is the largest distribution center in the United States. Hill Air Force Base has been the economic backbone of Davis County for many years and is a fundamental economic component of the community. The current economy has many components including manufacturing, trade, services and government. Some of the largest employers include Hill Air Force Base, Davis County School District, Lifetime Products Inc., Smith's Marketplace, Utility Trailer Manufacturing and Wal-Mart (UDWS 2007b). Davis County's population is large and growing and the housing and community demands are high. 2005 total personal income was \$7.7 billion up from \$7.2 billion in 2004 (BEA 2007). 2005 per capita income was \$28,776 (BEA 2007) and the average monthly nonfarm wage was \$2,713 (UDWS 2006).

## Hazard History

Within the mitigation planning process it is important to remember that the past is the key to the future. Identifying past hazard events provide a starting point for predicting where future events could occur. The following historical hazard event statistics were consolidated from the Spatial Hazard Events and Losses Database for the United States (SHELDUS) of the Hazards and Vulnerability Research Institute. This database records reported natural hazard events which cause greater than \$50,000 in damages. Monetary figures are in 2005 dollars.

## Risk Assessment

The risk assessment process revealed the following for Drought, Earthquake, Flood, Infestation, Landslide/Slope Failure, Severe Weather, and Wildland Fire. Drought, Infestation and Severe Weather are regional hazards and can be found in Part VII. Refer to Part VI for an explanation of the risk assessment methodology. According to this data, there are a total of 130 identified critical facilities within Davis County. For the complete list, refer to Appendix D.

Number of Structures with Moderate or Greater Vulnerability (% of Total)								
Critical Facilities	Total	Dam Failure	Flood	Ground Shaking	Liquefaction	Problem Soils	Slope Failure	Wildfire
Amateur Radio Repeaters	12	1 (8%)	2 (17%)	12 (100%)	5 (42%)	0 (0%)	1 (8%)	12 (100%)
Public Safety Repeaters	9	0 (0%)	0 (0%)	9 (100%)	1 (11%)	0 (0%)	1 (11%)	6 (67%)
Electric Generation Facilities	1	1 (100%)	0 (0%)	1 (100%)	1 (100%)	0 (0%)	0 (0%)	0 (0%)
Emergency Operations Centers	1	1 (100%)	1 (100%)	1 (100%)	1 (100%)	0 (0%)	0 (0%)	0 (0%)
Fire Stations	16	2 (13%)	1 (7%)	15 (100%)	9 (60%)	0 (0%)	0 (0%)	1 (6%)
Hospitals	3	0 (0%)	0 (0%)	2 (100%)	1 (50%)	0 (0%)	0 (0%)	0 (0%)
Oil Facilities	7	1 (14%)	0 (0%)	7 (100%)	7 (100%)	0 (0%)	0 (0%)	0 (0%)

Number of Structures with Moderate or Greater Vulnerability (% of Total)								
Critical Facilities	Total	Dam Failure	Flood	Ground Shaking	Liquefaction	Problem Soils	Slope Failure	Wildfire
Police Stations	14	3 (21%)	2 (14%)	14 (100%)	12 (86%)	0 (0%)	0 (0%)	0 (0%)
Schools	88	14 (17%)	3 (3%)	88 (100%)	69 (78%)	0 (0%)	1 (1%)	0 (%)
Water Treatment Facilities	3	0 (0%)	1 (33%)	3 (100%)	3 (100%)	0 (0%)	0 (0%)	0 (0%)

Table 9-1. Davis County Critical Facility Hazard Risk Assessment

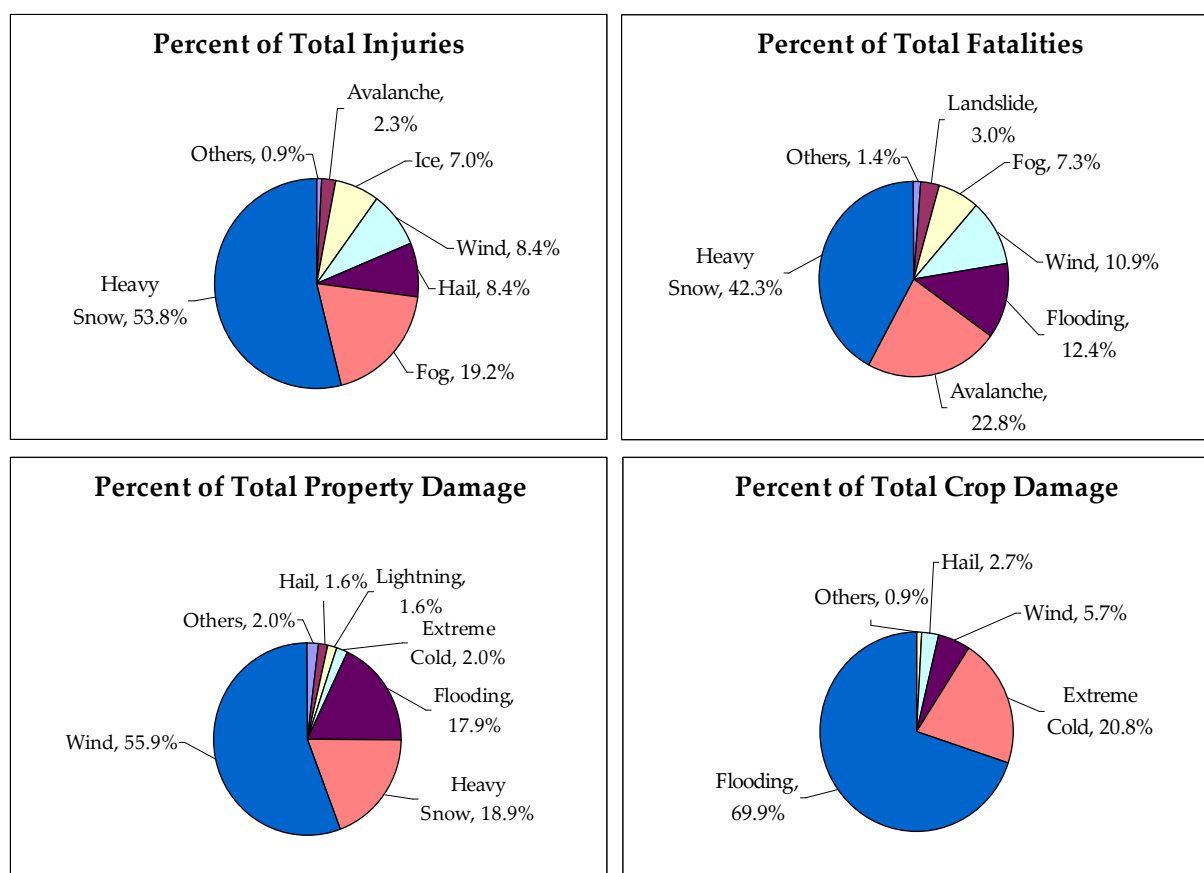
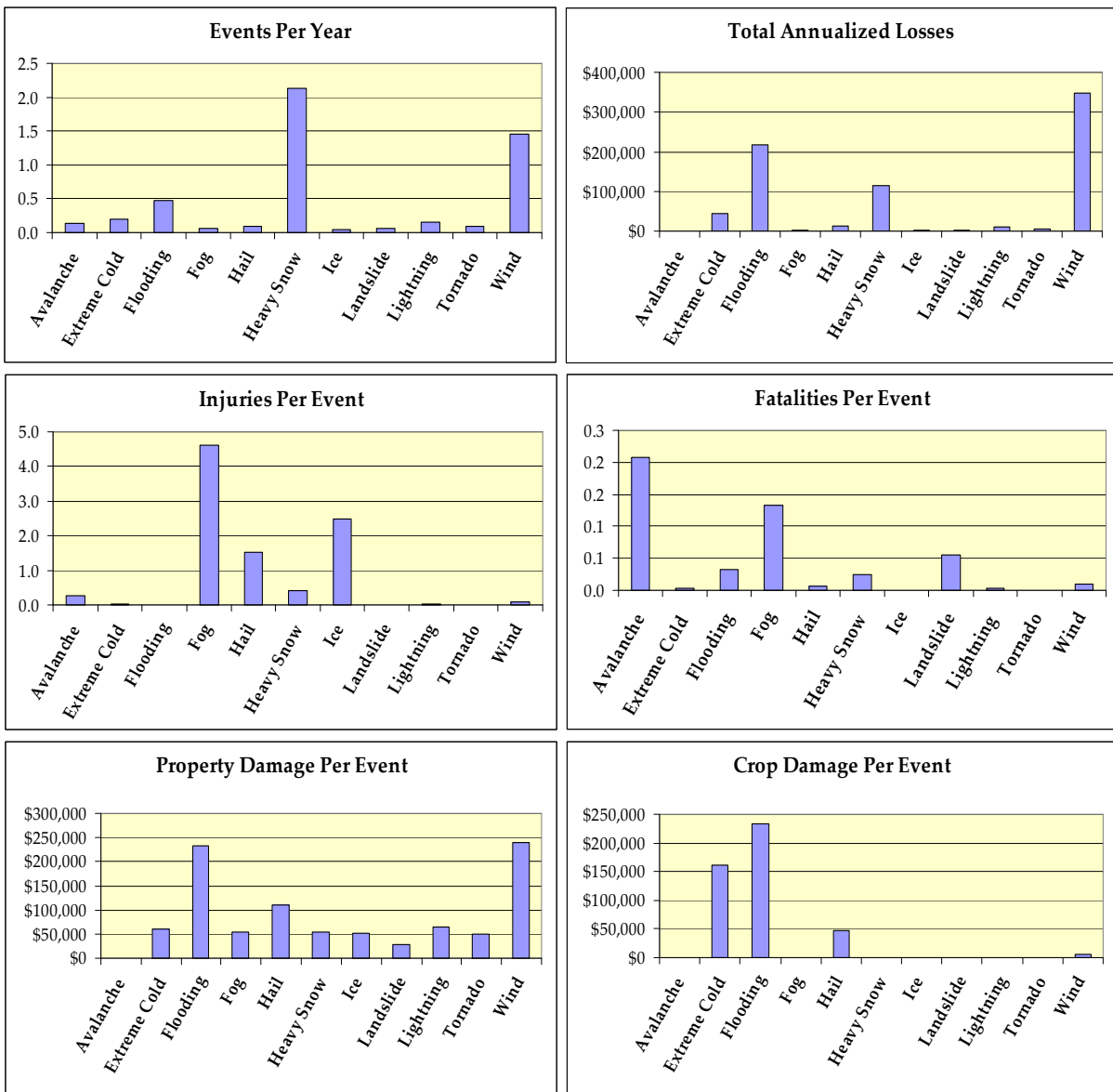


Figure 9-1. Major Disaster Event Averages 1962-2005, Davis County, Percentages (HVRI 2007)



**Figure 9-2. Major Disaster Annual and Per Event Averages 1962-2005, Davis County, Counts (HVRI 2007)**

*\*Does not include losses from wildfire*

## 1. Earthquake

### Hazard Profile

<i>Potential Magnitude</i>	X	<i>Catastrophic (&gt;50%)</i>	<i>Probability</i>		<i>Highly Likely</i>
		<i>Critical (25-50%)</i>		X	<i>Likely</i>
		<i>Limited (10-25%)</i>			<i>Possible</i>
		<i>Negligible (&lt; 10%)</i>			<i>Unlikely</i>
<i>Location</i>	Eastern areas of Bountiful, Centerville, Farmington, Kaysville, Fruit Heights, and Layton along the western portion of the Intermountain Seismic Belt. Ground shaking will be felt throughout the entire County. Surface fault ruptures will be found along and near the current fault trace. Liquefaction can be expected in areas of deep sediment and shallow groundwater, from the foothills to the western portion of the county near the Great Salt Lake.				
<i>Seasonal Pattern</i>	There is no seasonal pattern for earthquakes, they can occur at any time of the year or day during any or all weather conditions.				
<i>Conditions</i>	Liquefaction Potential is greatest near the Great Salt Lake along the low-lying areas of the county, in soils that are comprised of old lakebed sediments. Historic movement along faults. Intermountain Seismic Zone, and the Wasatch Fault Zone.				
<i>Duration</i>	Actual ground shaking will be under one minute, aftershocks can occur for weeks or even months.				
<i>Secondary Hazards</i>	Fire, landslide, rock falls, avalanche, flooding/				
<i>Analysis Used</i>	Review of hazard analysis plans and other information provided by the University of Utah Seismograph Station, UGS, USGS, DHLS, AGRC.				

### Description of Location and Extent

According to the Davis County Emergency Operations Plan, Davis County contains the highest density of faults in the entire state of Utah. These faults are primarily normal faults, meaning the two sides of the fault are moving away from one another. Davis County has experienced earthquakes in the past, but few damaging earthquakes have had their epicenters within the county boundary in recent history (Map 9-2, page 121).

In northern Utah, the Wasatch Fault Zone (WFZ) is an active fault zone that is capable of producing a large 7.0+ Richter magnitude earthquake on average every 300-400 years. There is a 25% probability of a damaging earthquake occurring along one of the WFZ segments in the next 100 years (McCalpin and Nishenko 1996 in UGS 2002). The average repeat time on any single segment ranges from about 1,200-2,600 years. The last major earthquake for each of the five central segments ranges from 250 to 2,900 years ago (Lund 2005). Davis County is situated between two segments of the Wasatch Fault, the Weber Segment and the Salt Lake Segment. The Weber Segment, running from North Salt Lake along the eastern edge of the valley to Willard Bay, represents the fault segment of greatest concern within the County. The Weber Segment has produced four large earthquakes over the past 4,000 years, making it one of the most active fault segments. The Weber and Salt Lake segments of the Wasatch Fault both have the potential for a magnitude 7.0 or greater earthquake which would cause much damage to the entire county.

The East Great Salt Lake fault is another active fault with two segments (Fremont Island and Antelope Island) in Davis County. Less is known about this fault due to its proximity to populated areas. Dinter and Pechmann (2005) conducted Carbon-14 dating of the two segments in 2004 and found the fault to be very active. For general information on all Quaternary faults in Davis County, see Table 9-2.

Name	Fault Type	Length (km)	Time of Most Recent Deformation	Recurrence Interval
Fremont Island section, EGSFZ	Normal	30	3150 +235/-211 cal yr B.P.	4200 years
Antelope Island section, EGSFZ	Normal	35	586 +201/-241 cal yr B.P.	4200 years
Salt Lake segment, WFZ	Normal	43	1300 ±650 cal yr B.P.	1300 years
Weber segment, WFZ	Normal	56	950 ±450 cal yr B.P.	1400 years

**Table 9-2. Davis County Quaternary Faults**

(UGS 2002, Lund 2005) (EGSLFZ=East Great Salt Lake Fault Zone, WFZ=Wasatch Fault Zone, cal yr

Maps 9-2 and 9-3 (pages 123-124) represent ground-shaking potential within Davis County for a 2500-year earthquake event. This represents an event with an approximate magnitude of 7.5 on the Richter scale. Spectral acceleration of 0.2 seconds represents the frequency of shaking which affects primarily one- to two-story buildings. Spectral acceleration of 1.0 seconds represents the frequency most likely to affect buildings three stories or higher. Values are represented as a percent of the force of gravity. Ten percent of gravity (0.1G) is the threshold at which poorly-built structures begin to suffer significant damage (FEMA 1995).

Liquefaction is one of the secondary hazards associated with an earthquake and affects almost the entire County. Davis County is located atop the ancient Lake Bonneville lakebed, which is made up of unconsolidated sandy soils. The area is also subject to shallow ground water and a high earthquake threat. For a further explanation of the liquefaction threat, see Map 9-4 (page 125). Refer to the “regional hazards identification” section for a narrative explanation.

## Vulnerability Analysis

Vulnerability to earthquake in Davis County was obtained from the modeling program Hazards United States – Multi-hazards (HAZUS-MH) \*\*. The following numbers were based on a probabilistic 2500-year event with a Richter magnitude of 7.1 as well as an arbitrary 5.9 event located in close proximity to the county’s most populated areas. These locations and magnitudes were chosen for their likelihood and proximity respectively. Default HAZUS-MH inventory for all infrastructure was used. (\*\**For a more detailed explanation of the loss estimation methodology of HAZUS-MH MR2, please see Part VI or the HAZUS-MH Technical Manual (Earthquake Model) at [www.fema.gov/hazus](http://www.fema.gov/hazus)*).

## Building Damage

HAZUS-MH classifies building damage into five states: none, slight, moderate, extensive and complete. Table 9-3 lists the number of buildings by occupancy estimated to sustain moderate to complete levels of damage during either an arbitrary Richter magnitude 5.9 (M5.9) or a probabilistic Richter magnitude 7.1 (M7.1) earthquake. Also listed are the estimated monetary losses to structures, contents/inventory and income.

Category	Number of Structures with >50% Damage		Category	Estimated Losses	
	Davis M5.9	2500-yr M7.1		Davis M5.9	2500-yr M7.1
Residential	7,618	41,310	Structural Losses	\$96,362,000	\$751,502,550
Commercial	282	954	Non-Structural Losses	\$345,379,000	\$2,646,616,900
Industrial	91	294	Content Losses	\$131,812,000	\$844,568,670
Government	15	49	Inventory Losses	\$4,504,000	\$38,314,060
Education	11	38	Income and Relocation Losses	\$90,090,000	\$3,983,479,080
Totals	8,017	42,645	Totals	\$668,147,000	\$8,264,481,260

**Table 9-3. Building Damage Counts and Estimated Losses**

### Transportation and Utilities Damage

Damages to transportation and utility infrastructure are in Table 9-4. Infrastructure sustaining moderate or worse damage and estimated monetary losses are both shown.

Category	Total	At Least Moderate Damage (>50%)		Estimated Losses	
		Davis M5.9	2500-yr M7.1	Davis M5.9	2500-yr M7.1
Waste Water Facilities	3	1	3	\$21,559,000	\$77,769,000
Waste Water Pipelines	1,242 km	203 leaks/breaks	4,455 leaks/breaks	\$730,000	\$16,039,000
Potable Water Pipelines	2,069 miles	256 leaks/breaks	5,633 leaks/breaks	\$923,000	\$20,279,000
Natural Gas Pipelines	828 km	216 leaks/breaks	4,775 leaks/breaks	\$780,000	\$17,145,000
Electrical Power Facilities	1	0	1	\$11,375,000	\$51,503,000
Communication Facilities	5	0	4	\$46,000	\$220,000
Highway Bridges	130	0	81	\$3,359,000	\$61,530,000
Railway Facilities	2	0	2	\$712,000	\$2,169,000
Airport Facilities	4	0	4	\$2,569,000	\$9,719,000
Total Losses				<b>\$42,053,000</b>	<b>\$256,373,000</b>

**Table 9-4. Damage to Transportation and Utilities**

### Debris Removal

Table 9-5 shows how much debris would be generated by the earthquake and how many loads it would take to remove the debris, based on 25 tons per load. One truck can likely haul one load per hour. A second debris removal issue is landfill space. Fifty thousand tons at a weight-to-volume ratio of one ton per cubic yard would cover more than ten acres with a depth of three feet.

Category	Davis M5.9	2500-yr M7.1
Brick, Wood & Others	111,000 tons / 4,440 loads	758,000 tons / 30,320 loads
Concrete & Steel	197,000 tons / 7,880 loads	1,603,000 tons / 64,120 loads

**Table 9-5. Debris Generated/Number of Loads**

## Fire Following

Multiple ignitions and broken water mains following an earthquake can make firefighting nearly impossible. HAZUS-MH uses estimated building damages, loss of transportation infrastructure and estimated winds to calculate the estimated area that would be burned following an earthquake. Table 9-6 provides estimates of ignitions, people at risk and the building stock exposed to fires following an earthquake.

Category	Number of Structures	
	Davis M5.9	2500-yr M7.1
Ignitions	11	12
Persons Exposed	261	447
Value Exposed	\$13,663,000	\$28,594,000

**Table 9-6. Fire Following Event, Population Exposed, and Building Stock Exposed**

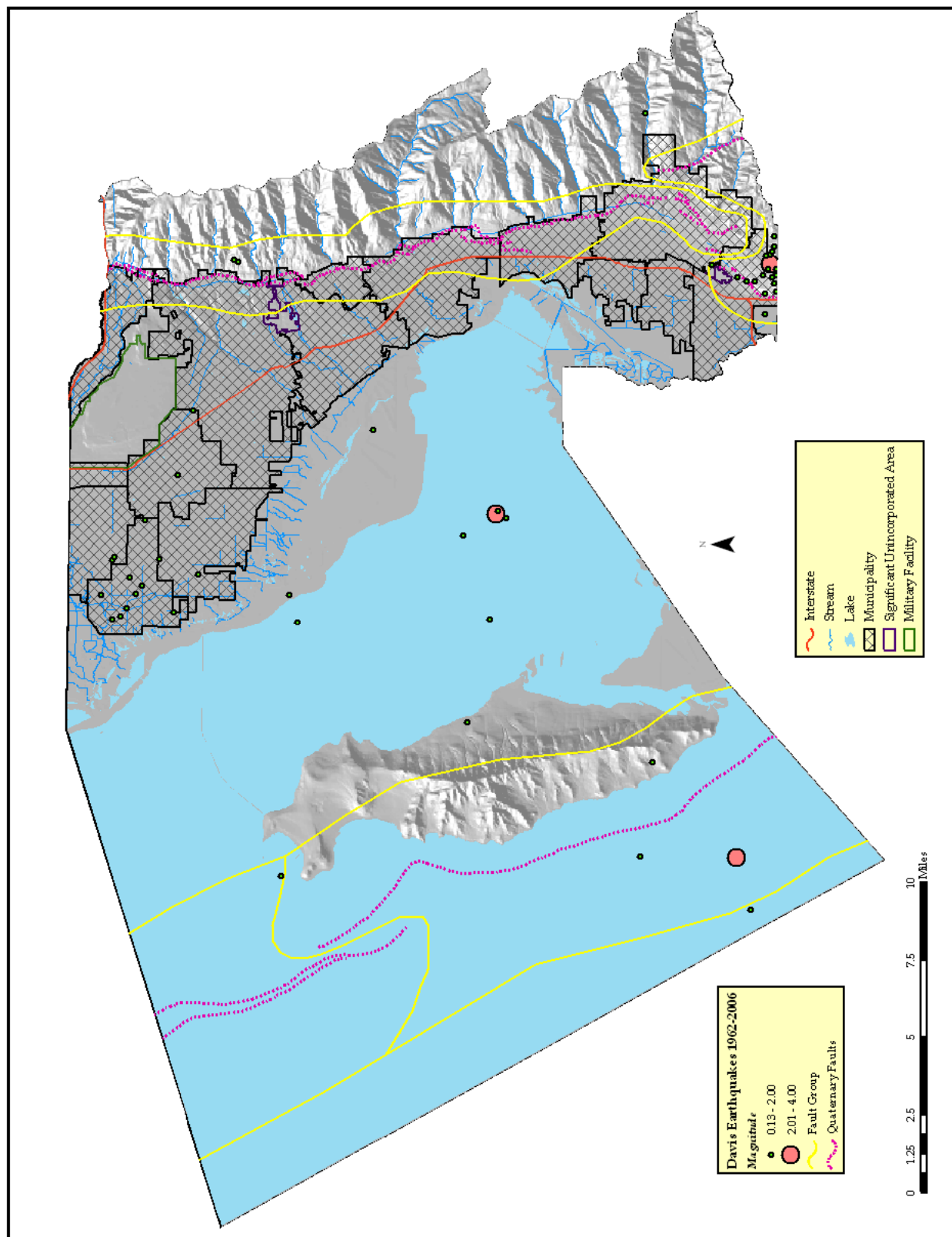
## Casualties

Table 9-7 estimates casualties likely to occur during each earthquake scenario. The nighttime scenario (2 a.m. local time) assumes a primarily residential concentration of persons, the daytime scenario (2 p.m. local time) a commercial concentration, and the commute scenario (5 pm. local time) a concentration of persons on commuting routes. Categories of casualties include those not requiring hospitalization (minor), those requiring treatment at a medical facility (major), and fatalities.

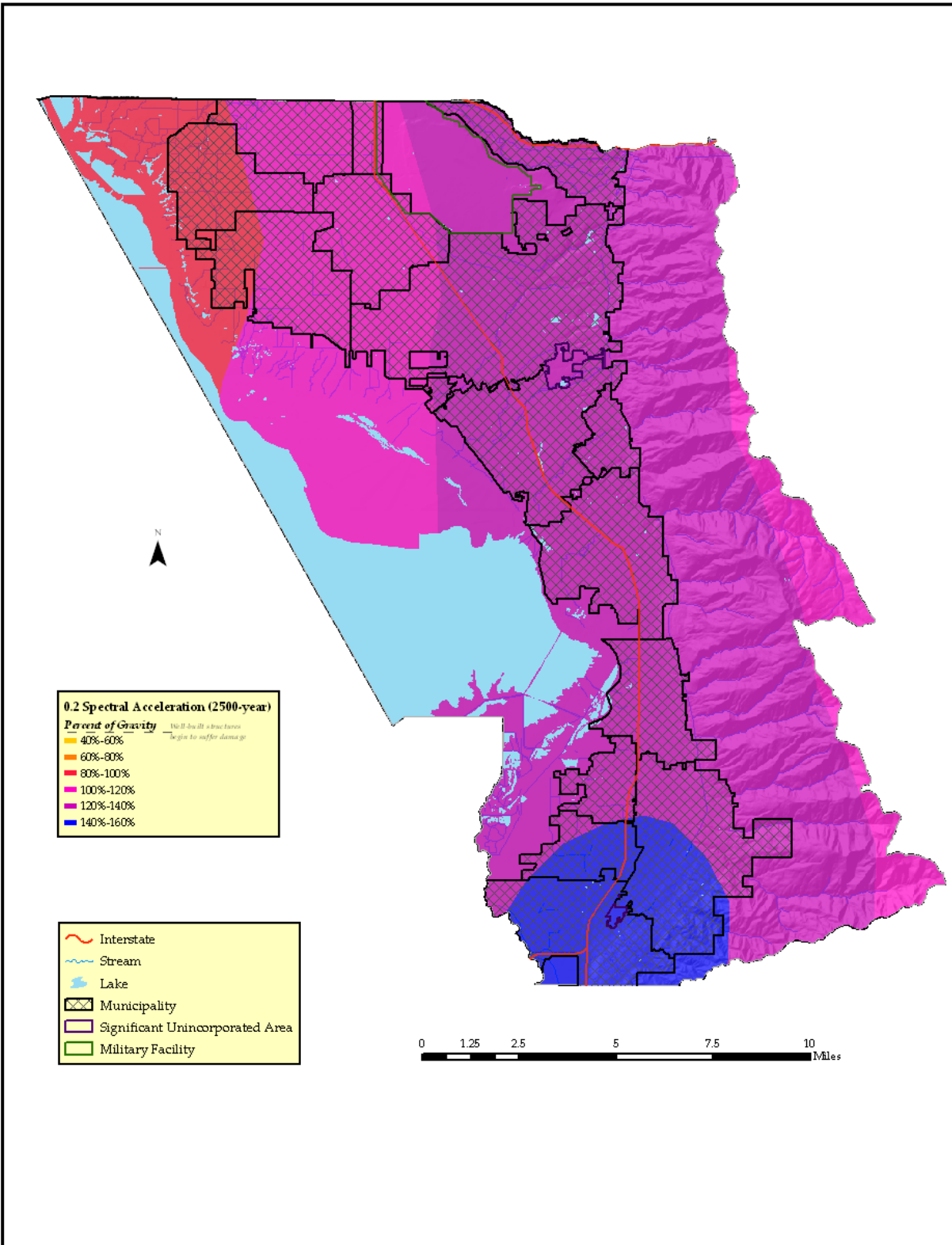
Night Event	Davis M5.9	2500-yr M7.1	Day Event	Davis M5.9	2500-yr M7.1	Commute Event	Davis M5.9	2500-yr M7.1
<i>Minor</i>	223	2,589	<i>Minor</i>	250	3,039	<i>Minor</i>	227	2,700
<i>Major</i>	46	792	<i>Major</i>	62	1,086	<i>Major</i>	59	924
<i>Fatalities</i>	9	186	<i>Fatalities</i>	14	302	<i>Fatalities</i>	13	243

**Table 9-7. Casualties**

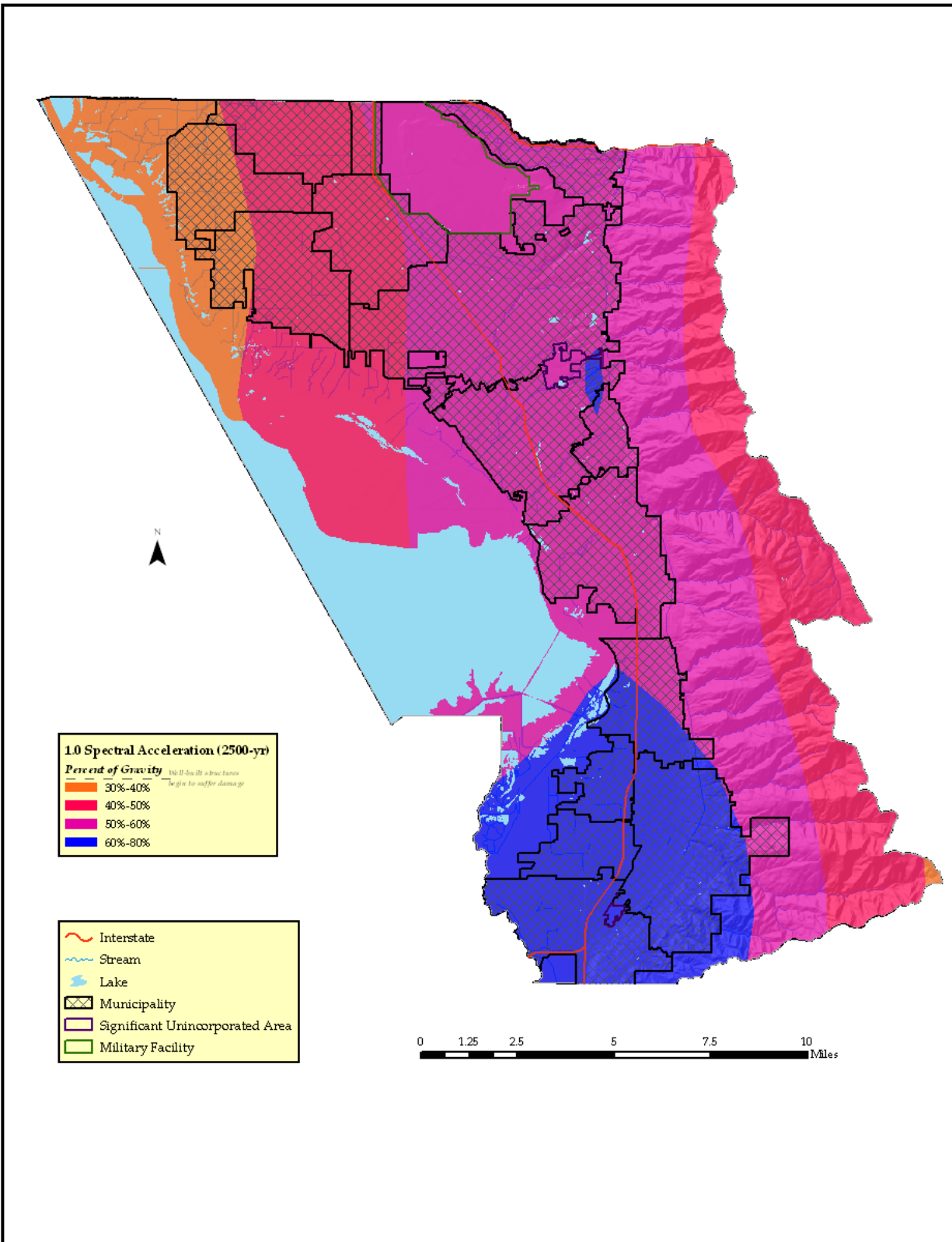




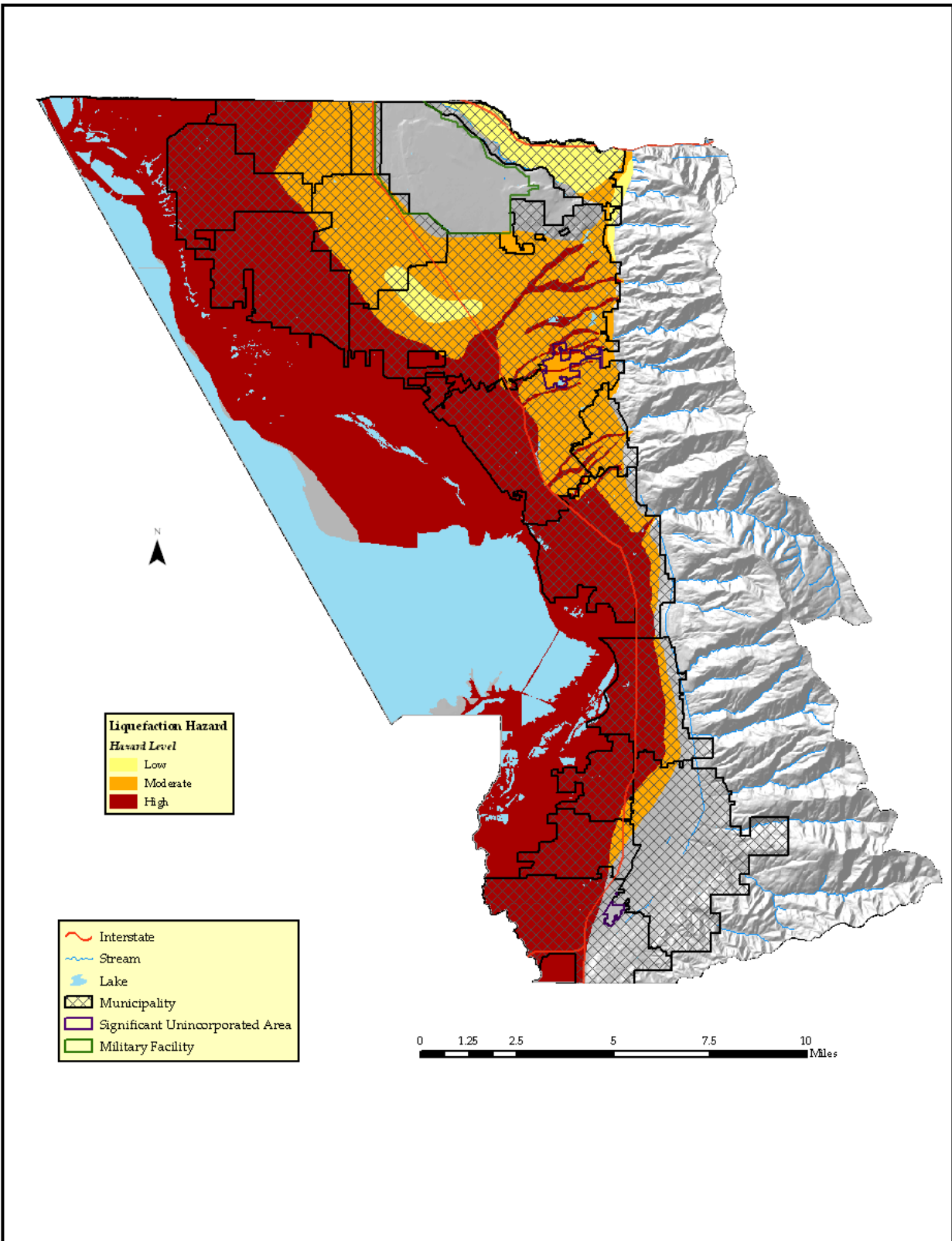
Map 9-2. Historical Davis County Earthquake Epicenters, 1962-2006 (Source: UUSS)



**Map 9-3. 0.2-Second Spectral Acceleration, Davis County (NSHMP 2002)**



Map 9-4. 1.0-Second Spectral Acceleration, Davis County (NSHMP 2002)



**Map 9-5. Liquefaction Potential, Davis County (Christenson and Shaw 2008)**



## 2. Flood

### Hazard Profile

<i>Potential Magnitude</i>		<i>Catastrophic (&gt;50%)</i>	<i>Probability</i>		<i>Highly Likely</i>
	X	<i>Critical (25-50%)</i>			<i>Likely</i>
		<i>Limited (10-25%)</i>		X	<i>Possible</i>
		<i>Negligible (&lt; 10%)</i>			<i>Unlikely</i>
<i>Location</i>	Weber River; many creeks along Wasatch Front.				
<i>Frequency</i>	Spring, late summer.				
<i>Conditions</i>	Cloudburst storms and heavy snowfall runoff.				
<i>Duration</i>	Flooding can last anywhere from hours to days and even months.				
<i>Secondary Hazards</i>	Raw sewage/health risk, electrical fires, gas spills.				
<i>Analysis Used</i>	Review of FIS, FIRM, HAZUS-MH.				

### Description of Location and Extent

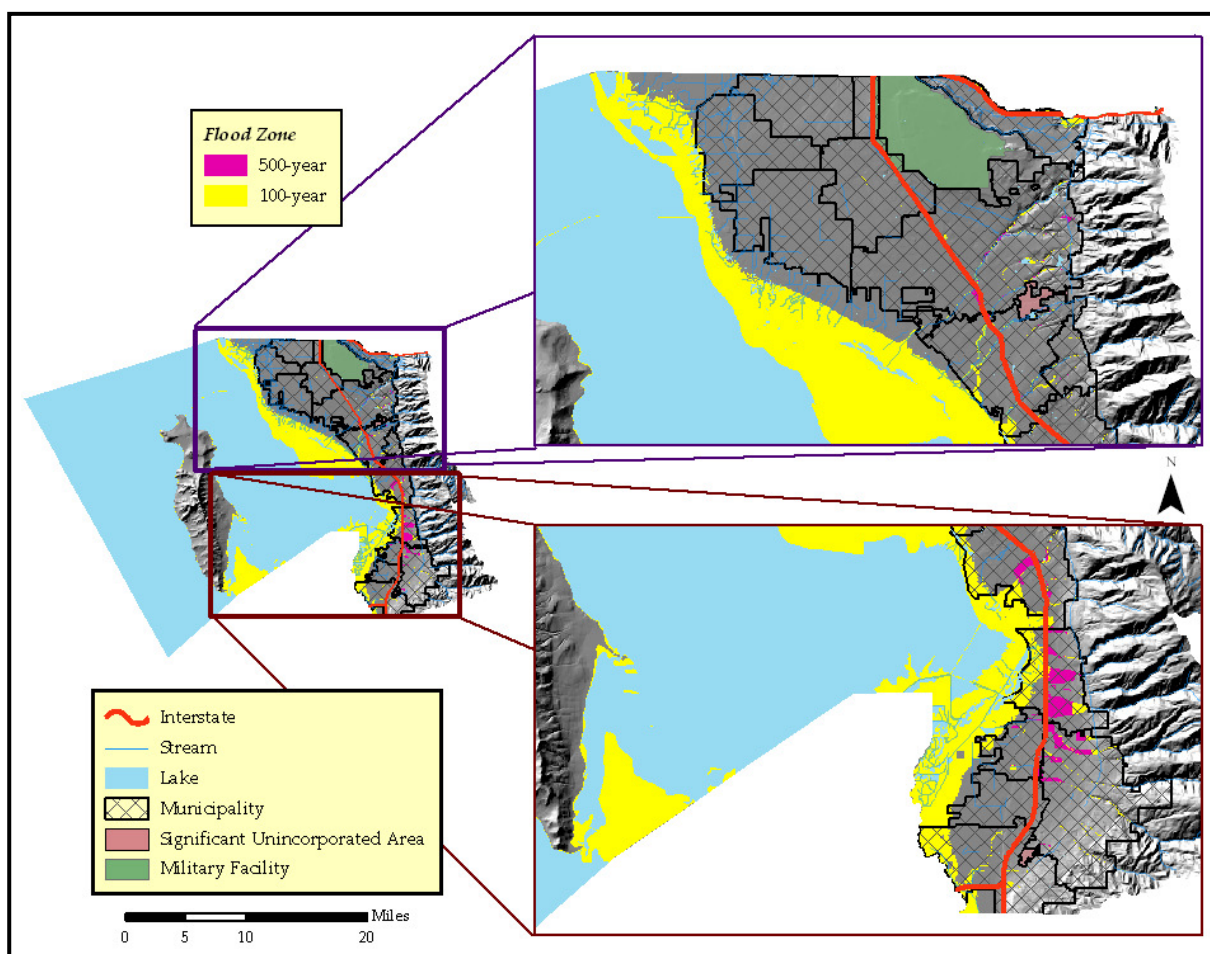
The greatest flood risk within Davis County has been associated with cloudburst storms that generally result in flash flooding in localized areas. Heavy rain and rapid snowpack melt can also result in unusually heavy water, and/or mud and debris flows. Davis County's precipitation is associated with the Wasatch Mountain Range, which is where most of the County's surface water originates. All of the streams originate in canyons and pass along alluvial fans, across the eastern portion of the County into the Great Salt Lake.

The two major rivers that pose a flood threat are the Weber River and Jordan River. The Weber River flowing through South Weber, acts as a partial northern county boundary. The Jordan River flows through uninhabited areas and into the Great Salt Lake on southern end of the county. Many smaller tributaries have flooded in the past and also pose a future flood threat. Many are mapped through the NFIP. Many channels within the county can pose a threat due to channel constrictions from debris and could result in residential flooding. All of the alluvial fans in the county have been developed or are being developed, and therefore, residential and commercial flooding is probable. Flood can also pose a threat to the agricultural lands that are in the lower portions of the alluvial fans.

A little more than 50% of the County is under the Great Salt Lake. This results in a very high ground water table, threatening shorelines and, in some cases, agricultural lands and roads. Flooding in wetlands areas, along the shores of the Great Salt Lake, also threatens urban development.

High stream flows and velocity can affect the residential, commercial and recreational development on Farmington Creek, Kays Creek, Ricks Creek and Steeds Creek. Roads can be affected from high stream flows on Barton Creek and Holmes Creek. Primary threatened utilities are power substations and water treatment plants located on Stone Creek, Farmington Creek, Holmes Creek and Millcreek.

In 1983, Rudd Creek experienced a debris flow that damaged several homes, roads and other infrastructure. Farmington Creek also flooded that year, damaging homes and also contaminating the city's water supply.



**Map 9-6. 100-year and 500-year Flood Plains, Davis County (FIRM 2007)**

Davis County Public Works has projected to spend over \$50 million in flood control mitigation projects over the next few years. Much of that work will concentrate in existing creek beds throughout the County. The County spends over \$1 million in yearly maintenance and new project costs.

## Vulnerability Assessment

Assessing flood in Davis County was obtained from the modeling program Hazards United States – Multi-hazards (HAZUS-MH), for both 100-year (NFIP Zone A) and 500-year (NFIP Zone B or Zone X (shaded)) flood events. Analysis was completed using Flood Insurance Rate Maps (FIRM) or Digital Flood Insurance Rate Maps (DFIRM). Only streams which contained detailed flood cross-section data could be evaluated. Flooding from the Great Salt Lake was not included. Consequently, the results should be considered conservative. Total monetary losses include structures, contents and business interruption. (For a more detailed explanation of the loss estimation methodology of HAZUS-MH MR2, please see Part VI or the HAZUS-MH Technical Manual (Flood Model) at [www.fema.gov/hazus](http://www.fema.gov/hazus)).

Number of Structures in Flood Plains				
	Acres Flooded	Population Displaced	Residential Units Total Losses	Commercial/Industrial Units Total Losses
100-year Flood	683	2,311	245 \$37,810,000	3 \$18,370,000
500-year Flood	1155	2,492	266 \$43,430,000	3 \$23,210,000

**Table 9-8. Davis County Flood Hazard**

### Agricultural Losses

Agricultural losses are listed in Table 9-9. Losses are computed according to the number of days in which the crops are inundated with water. All numbers are estimated for a flood occurring near April 15th.

	100-year Losses Day 3	100-year Losses Day 7	500-year Losses Day 3	500-year Losses Day 7
Barley	\$14,749	\$19,665	\$15,899	\$21,198
Corn Silage	\$151,723	\$202,297	\$163,549	\$218,066

**Table 9-9. Agricultural Losses, June 15<sup>th</sup> Scenario**

### Vehicle Losses

Table 9-10 contains losses for vehicles in floods during both daytime and nighttime scenarios. The scenarios assume ninety percent (90%) of vehicles being removed from hazard areas due to warning.

Category	100-year	500-year
Daytime Scenario	\$1,535,794	\$1,603,936
Nighttime Scenario	\$2,533,427	\$2,751,553

**Table 9-10. Vehicle Losses**

### Debris Removal

Table 9-11 shows how much debris would be generated by flooding and how many loads it would take to remove the debris, based on a capacity of 25 tons per load. One truck can likely haul one load per hour. A second debris removal issue is landfill space. Fifty thousand tons at a weight-to-volume ratio of one ton per cubic yard would cover more than ten acres to a depth of three feet.

Category	100-year	500-year
Finishes	3,563 tons/143 loads	4,145 tons/166 loads
Structures	3,637 tons/146 loads	4,289 tons/ 172 loads
Foundations	3,771 tons/151 loads	4,461 tons/179 loads
Totals	10,970 tons/440 loads	12,895 tons/517 loads

**Table 9-11. Debris Generation and Removal**

### 3. Wildland Fire

#### Hazard Profile

<i>Potential Magnitude</i>		<i>Catastrophic (&gt;50%)</i>	<i>Probability</i>	X	<i>Highly Likely</i>
	X	<i>Critical (25-50%)</i>			<i>Likely</i>
		<i>Limited (10-25%)</i>			<i>Possible</i>
		<i>Negligible (&lt; 10%)</i>			<i>Unlikely</i>
<i>Location</i>	Wildland-Urban Interface (WUI) areas near the foothills and in forested areas.				
<i>Frequency</i>	Summer months				
<i>Conditions</i>	Areas affected by drought and/or heavily overgrown dry brush and debris Common triggers: lightning and humans.				
<i>Duration</i>	Days to months; depends on climate and fuel load as well as resources (financial, manpower) to extinguish the fire.				
<i>Secondary Hazards</i>	Landslides, debris flows, erosion, traffic accidents, air pollution.				
<i>Analysis Used</i>	Review of plans and data provided by US Forest Service, National Climatic Data Center, FEMA, AGRC, County Hazard Analysis Plans, and DHLS.				

#### Description of Location and Extent

Potential wildfire hazard within Davis County is growing as population growth is spreading into wildland areas known as the Wildland-Urban Interface (WUI) where the threat is most severe. Over the past 30 years, urban sprawl has encroached upon forested foothill areas and wildland areas.

The wildfire threat in Davis County has had a significant effect on watersheds, including landslide, debris flow, and other forms of erosion. Federal, state and local agencies have worked together to enforce ordinances and other programs such as re-vegetation zones to protect watersheds.

Wildland fire risk is found on Map 9-7, page 132. The map layers were provided by the Utah Division of Forestry, Fire and State Lands and show four categories of wildfire risk (Extreme, High, Medium and Low). These ratings cover all of Davis County and are based on the type and density of vegetation in each area as well as vulnerable populations. Additional factors that influence wildfires (weather conditions, wind speed and direction) are not considered in this risk assessment.

The entire County has a moderate or greater risk for wildfires. Municipalities primarily affected include the foothill communities of Bountiful, Centerville, Kaysville, Farmington, Fruit Heights, Layton, North Salt Lake, and South Weber. Antelope Island also has a considerable risk for experiencing a wildfire. Development has been advancing further and further into the WUI, with many of the most vulnerable homes some of the most costly to replace. Without effective fuel reduction measures and sufficient defensible space, these areas are likely to see considerable losses.

#### Vulnerability Assessment

Table 9-12 (below) estimates infrastructure vulnerable to wildland fire in Davis County. Provided are the number of units or total length of infrastructure vulnerable and the estimated replacement costs as provided by HAZUS-MH lost estimation software. Table 9-13 (page 131) estimates the total area, population, and buildings vulnerable to wildland fire for individual cities and unincorporated areas.



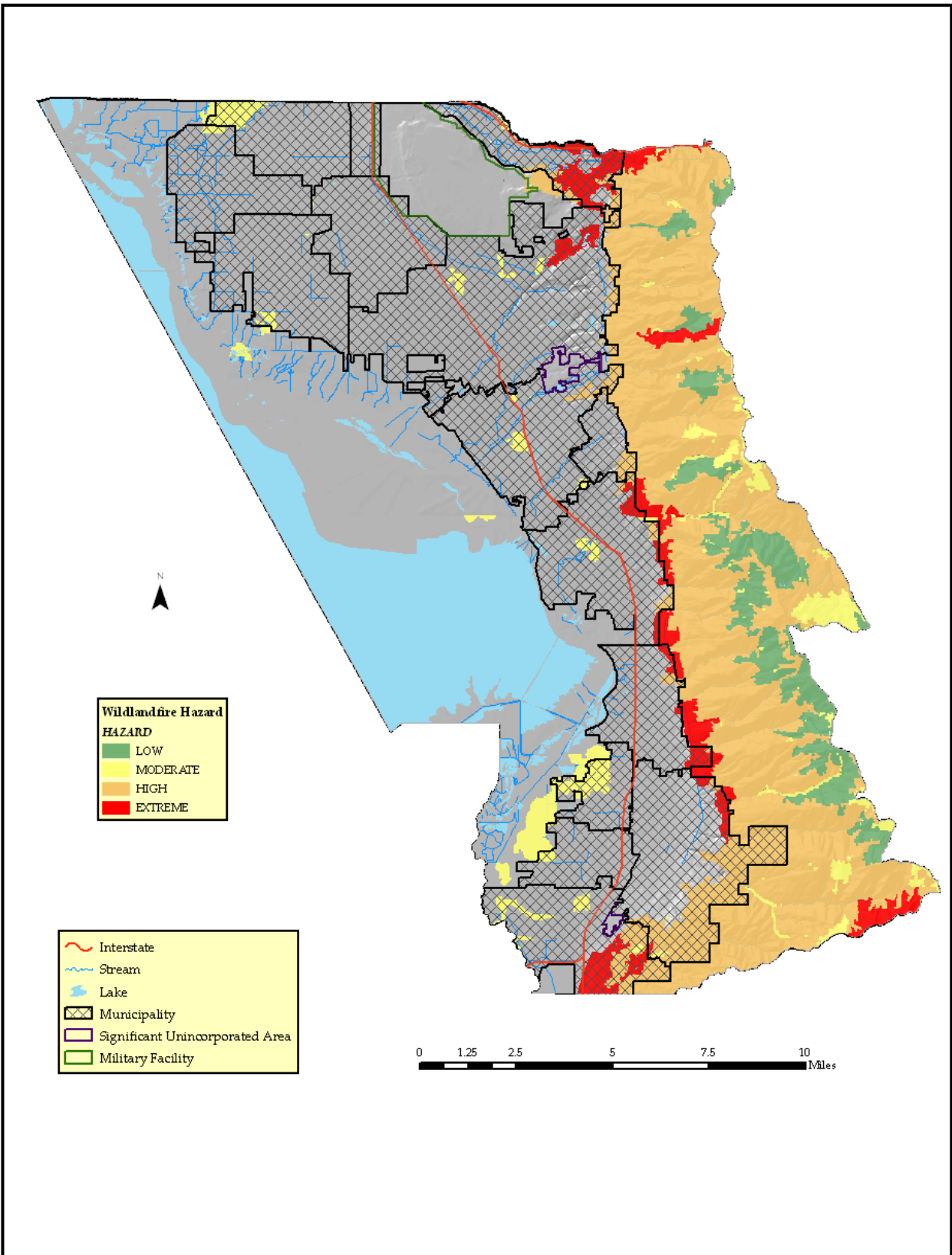
Item	Length (Miles) or Number of Units	Replacement Cost
Highways/Interstates	4.9 miles	\$24,200,027
Highway Bridges	10 bridges	\$15,469,072
Railway Segments	3.4 miles	\$1,682,730
Railway Bridges	0 bridges	\$0
Water Distribution Lines	N/A	N/A
Gas Lines	N/A	N/A
Sewer Lines	N/A	N/A
Total Estimated Infrastructure Replacement Cost		\$41,351,829

**Table 9-12. Infrastructure Vulnerable to Wildland Fire, Davis County**

Incorporated Areas	City Area (Acres)	Population in Hazard Area	Structures in Areas of Moderate or Greater Hazard	
			Residential (Replacement Value)	Commercial (Annual Sales)
Bountiful	8,450	3,146	1,538 \$341,889,000	163 \$136,290,000
Centerville	3,808	277	87 \$18,206,298	8 \$4,400,000
Clearfield	4,897	0	0	0
Clinton	3,809	0	0	0
Farmington	6,356	680	297 \$45,245,145	3 \$250,000
Fruit Heights	1,465	126	34 \$9,055,820	4 \$18,000,000
Kaysville	6,615	215	72 \$11,938,498	1 \$150,000
Layton	14,036	1,726	366 \$64,019,439	60 \$86,680,000
North Salt Lake	5,474	3,750	1,364 \$273,551,328	44 \$23,160,000
South Weber	3,091	80	25 \$2,343,726	7 \$60,000,000
Sunset	930	0	0	0
Syracuse	5,833	0	0	0
West Bountiful	1,908	0	0	0
West Point	4,455	0	0	0
Woods Cross	2,432	0	0	0

Unincorporated Areas	Area (Acres)	Population Affected	Structures in Areas of Moderate or Greater Hazard	
			Residential (Replacement Value)	Commercial (Annual Sales)
Hill AFB	6,919	0	0	0
Mutton Hollow	911	345	108 \$19,249,600	0 0
Val Verda	259	459	136 \$18,640,300	0 0

**Table 9-13. Vulnerability Assessment for Wildland Fire, Davis County (2006 socioeconomic values)**



**Map 9-7. Wildland Fire Risk, Davis County (UDFFSL 2007)**

## 4. Slope Failure

### Hazard Profile

<i>Potential Magnitude</i>		<i>Catastrophic (&gt;50%)</i>	<i>Probability</i>		<i>Highly Likely</i>
	X	<i>Critical (25-50%)</i>		X	<i>Likely</i>
		<i>Limited (10-25%)</i>			<i>Possible</i>
		<i>Negligible (&lt; 10%)</i>			<i>Unlikely</i>
<i>Location</i>	See Map 9-8. Generally occur in canyon mouths and foothill areas.				
<i>Frequency</i>	Spring and Summer; after heavy or long-duration precipitation.				
<i>Conditions</i>	Usually caused by the stress release of over-weighted soils, shallow groundwater in certain soils, or loosening of rock and debris.				
<i>Duration</i>	Hours to years.				
<i>Secondary Hazards</i>	Flooding (natural dams), traffic accidents.				
<i>Analysis Used</i>	Information and maps provided by UGS, DHLS.				

### Description of Location and Extent

Future landslide areas are usually located in the areas of historical landslides, which are well defined and localized. Landslides have been one of the most reoccurring hazards within Davis County along the canyon benches. The homes in these areas have the greatest vulnerability to rockfalls, debris flows, landslides and other types of slope failure. Map 9-8 (page 136) delineates areas of potential landslides for Davis County.

Recent landslides in Davis County include the Heather Drive landslide (2001) and the South Weber Drive landslides (2005 and 2006). Damages from the Heather Drive landslide have been estimated at over \$1 million affecting homes and utilities (Elliot 2007). The South Weber Drive landslides each caused less than \$50,000 in damages (HVRI 2007).

Debris flows associated with ground saturation and runoff has been a major problem in Davis County. Many of the alluvial fans at the mouths of Davis County's fifteen canyons have been developed. This development is vulnerable due to the debris flows and flash flooding associated with the alluvial fans. Ten of the fifteen canyons have enforced structural mitigation through the use of debris and detention basins. The protected canyons include Barnard Creek, Barton Creek, Stone Creek, Parish Creek, Ricks Creek, Steed Creek, Farmington Creek, Shepherd Creek, Baer Canyon, and the South Fork of Holmes Creek with one debris basin each and Mill Creek which contains two debris basins. Unprotected canyons include Deuel Creek, Davis Creek, Snow Canyon, North, South, and Middle Forks of Kays Creeks.



Heather Drive Landslide, Layton (Source: American

Many homes are built on alluvial fans and additional detention basins and/or an upgrade of existing basins is needed. Davis County and other local jurisdictions recognize the need to protect alluvial fans from slope failure. Davis County has made progress in the past by becoming Utah's first Project Impact Community to help mitigate landslides through projects in the Centerville Canyon alluvial fan and Barnard Creek alluvial fan.

## Vulnerability Assessment

Table 9-14 estimates infrastructure vulnerable to landslides in Davis County. Provided are the number of units or total length of infrastructure vulnerable and the estimated replacement costs as provided by HAZUS-MH lost estimation software. Table 9-15 estimates the total area, population, and buildings vulnerable to landslides for individual cities and unincorporated areas. Repair and/or replacement of the Davis Aqueduct and associated distribution network would increase the numbers below by an additional \$100-200 million.

Item	Length (Miles) or Number of Units	Replacement Cost
Highways/Interstates	1.39 miles	\$9,581,012
Highway Bridges	11 bridges	\$17,140,206
Railway Segments	.26 miles	\$295,634
Railway Bridges	0 bridges	\$0
Water Distribution Lines	235.50 miles	\$7,579,602
Gas Lines	94.14 miles	\$3,031,846
Sewer Lines	141.42 miles	\$4,547,764
Total Estimated Infrastructure Replacement Cost		\$42,176,064

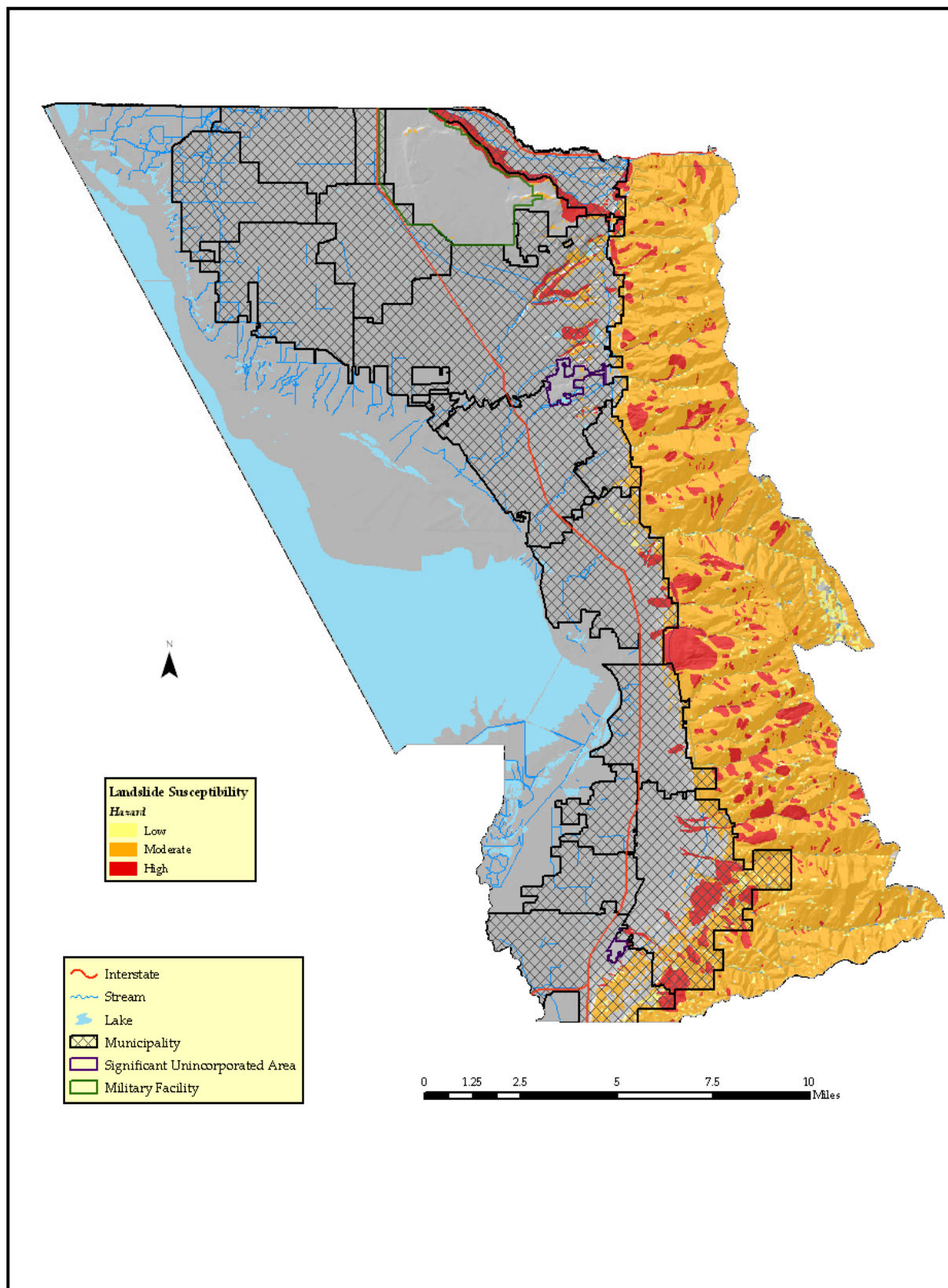
**Table 9-14. Infrastructure Vulnerable to Landslides, Davis County**

Incorporated Areas	Acres Affected	Population Affected	Structures in Areas of Moderate or Greater Hazard	
			Residential (Replacement Value)	Commercial (Annual Sales)
Bountiful	2,477	15,575	4,678 \$906,128,600	248 \$7,963,830
Centerville	327	3,600	738 \$152,509,600	18 \$2,641,732
Clearfield	0	0	0	0
Clinton	0	0	0	0
Farmington	723	4,752	1,011 \$195,830,700	16 \$2,104,783
Fruit Heights	247	1,669	422 \$81,741,400	1 \$12,489
Kaysville	131	1,282	340 \$65,858,000	2 \$124,523
Layton	1,518	7,792	2,199 \$425,946,300	38 \$26,739,586
North Salt Lake	1,018	4,287	1,362 \$263,819,400	31 \$5,163,445
South Weber	808	2,418	674 \$130,553,800	9 \$1,786,389

Incorporated Areas	Acres Affected	Population Affected	Structures in Areas of Moderate or Greater Hazard	
			Residential (Replacement Value)	Commercial (Annual Sales)
Sunset	0	0	0	0
Syracuse	0	0	0	0
West Bountiful	0	0	0	0
West Point	0	0	0	0
Woods Cross	0	0	0	0

Unincorporated Areas	Acres Affected	Population Affected	Structures in Areas of Moderate or Greater Hazard	
			Residential (Replacement Value)	Commercial (Annual Sales)
Hill AFB	115	0	0	0
Mutton Hollow	23	135	40 \$7,748,000	0
Val Verda	2	34	12 \$2,324,400	0

Table 9-15. Vulnerability Assessment for Landslides, Davis County (2006 socioeconomic values)



**Map 9-8. Landslide Susceptibility, Davis County (Giraud and Shaw 2007)**



## 5. Dam Failure

### Hazard Profile

<i>Potential Magnitude</i>	X	<i>Catastrophic (&gt;50%)</i>	<i>Probability</i>		<i>Highly Likely</i>
		<i>Critical (25-50%)</i>			<i>Likely</i>
		<i>Limited (10-25%)</i>		X	<i>Possible</i>
		<i>Negligible (&lt; 10%)</i>			<i>Unlikely</i>
<i>Location</i>	See Map 9-9 (page 139).				
<i>Frequency</i>	<i>Rainy Day Failure:</i> Spring, late summer <i>Sunny Day Failure:</i> Anytime				
<i>Conditions</i>	<i>Rainy-day failure</i> happens mainly during heavy precipitation events, can have some warning time. <i>Sunny day failure</i> happens with no warning at all usually from sudden structural failure.				
<i>Duration</i>	Hours to days.				
<i>Secondary Hazards</i>	Raw sewage/health risk, electrical fires, gas spills.				
<i>Analysis Used</i>	Review of BOR inundation maps and plans, FIS, Utah Division of Water Rights.				

### Description of Location and Extent

Ninety dams and irrigation impoundments are located in Davis County. Twenty-six of these are listed as high hazard; meaning if they fail, they have a high probability of causing loss of life and extensive economic loss. Twenty-three dams have a moderate hazard threat; if they fail, they have a low probability of causing loss of life. Both threats would cause appreciable property damage. Mitigation efforts should be developed and pursued. Thirty-two dams have a low hazard threat, if they were to fail there would be a minimal threat to life and economic losses would be minor. Damage would be limited to the owner of the dam. However, they should still be monitored. No hazard rating is provided for nine dams. These dams have yet to be inspected. Table 9-16 is a list of all high and moderate hazard dams in Davis County.

The dam safety hazard is classified by the State Engineer. This classification is based upon the damage caused if the dam were to fail. The classification of a high hazard dam does not mean that the dam has a high probability of failure.

### Vulnerability Assessment

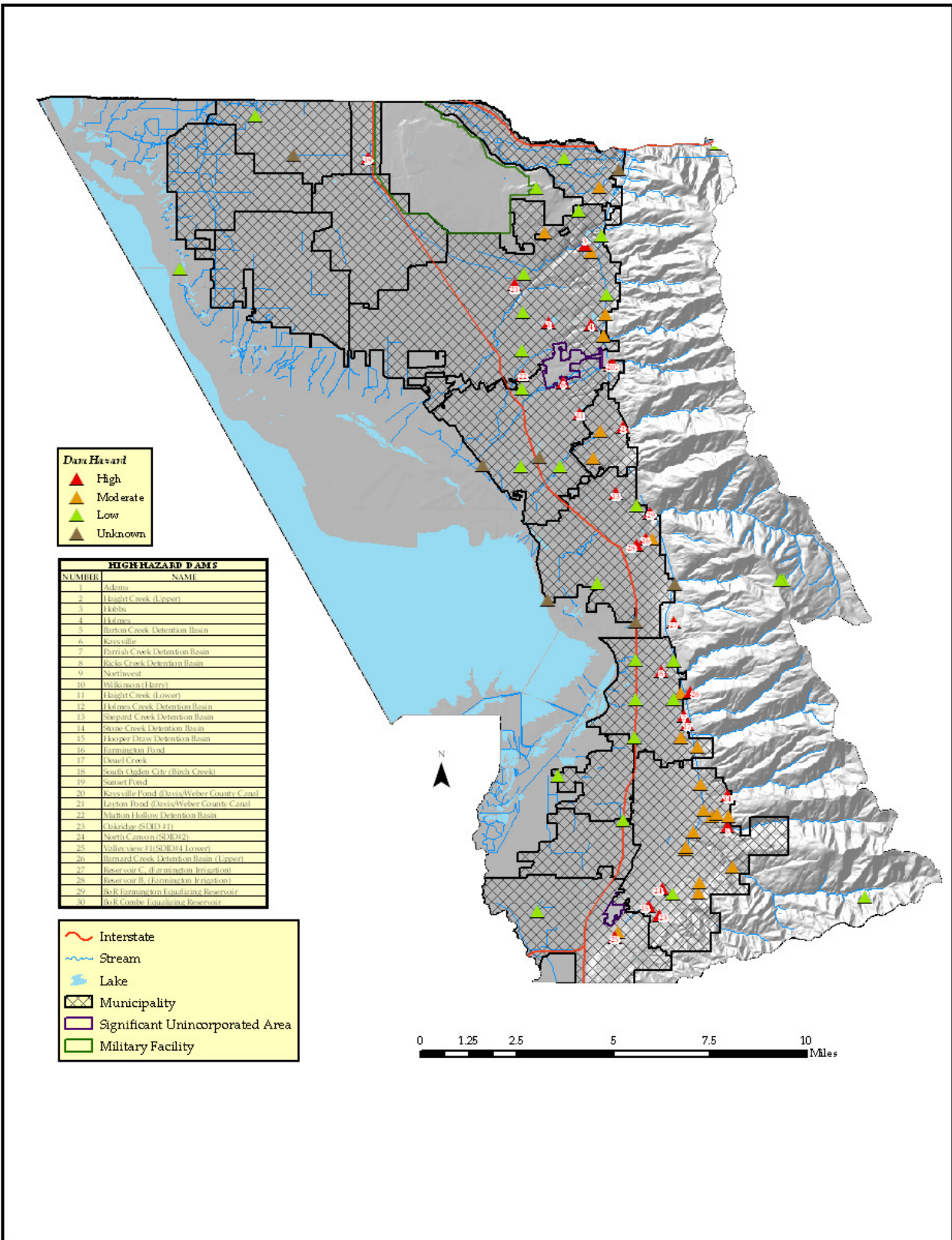
Table 9-17 estimates infrastructure vulnerable to dam failure in Davis County. Provided are the number of units or total length of infrastructure vulnerable and the estimated replacement costs as provided by HAZUS-MH lost estimation software. Table 9-18 (page 142) estimates the total area, population, and buildings vulnerable to dam failure for individual cities and unincorporated areas.

Name	Rating	Name	Rating
Adams	High	Valleyview #1(SDID#4 Lower)	High
BOR Farmington Equalizing Reservoir	High	BOR 1.9 Equalizing Reservoir	Moderate
Bountiful – North Canyon (SDID#2)	High	BOR 17.2 Equalizing Reservoir	Moderate
Bountiful – Oakridge (SDID #1)	High	BOR 17.8 Equalizing Reservoir	Moderate
Centerville – Barnard Creek (Lower ) DB	High	BOR 18.0 Equalizing Reservoir	Moderate
Davis County – Barton Creek DB	High	BOR 18.0 Upper Equalizing Reservoir	Moderate
Davis County – Farmington Pond	High	BOR 18.5 Equalizing Reservoir	Moderate
Davis County – Holmes Creek DB	High	BOR 18.8 Equalizing Reservoir	Moderate
Davis County – Hooper Draw DB	High	BOR 18.9 Equalizing Reservoir	Moderate
Davis County – Mutton Hollow DB	High	BOR 19.5 Lower Equalizing Reservoir	Moderate
Davis County – Parrish Creek DB	High	BOR 19.5 Upper Equalizing Reservoir	Moderate
Davis County – Ricks Creek DB	High	BOR 2.6 Equalizing Reservoir	Moderate
Davis County – Shepherd Creek DB	High	BOR 4.3 Equalizing Reservoir	Moderate
Davis County – Stone Creek DB	High	BOR 5.0 Equalizing Reservoir	Moderate
Davis/Weber County Canal Co. – Kaysville	High	Bountiful City – Eagle Ridge	Moderate
Davis/Weber County Canal Co. – Layton Pond	High	Bountiful City – Millcreek DB #3	Moderate
Davis/Weber County Canal Co. – Sunset Pond	High	Centerville City Erosion Dike	Moderate
Deuel Creek (Former BOR Regulating)	High	Centerville City – Deuel Creek DB	Moderate
Benchland Irrigation – Reservoir B	High	Davis County – Barnard Creek (Lower) DB	Moderate
Benchland Irrigation – Reservoir C	High	Farmington City – Rudd Creek DB	Moderate
Haight Creek (Lower)	High	Fruit Heights – Dry Hollow DB	Moderate
Haight Creek (Upper)	High	Haight Creek (Middle)	Moderate
Hobbs	High	Lower (Dennis)	Moderate
Holmes	High	Valleyview #2(SDID#3 Upper)	Moderate
Kaysville	High		
<b>Table 9-16 High and Moderate Hazard Dams, Davis County (Utah Division of Water Rights 2007)</b>			

Item	Length (Miles) or Number of Units	Replacement Cost
Highways/Interstates	12.85 miles	\$105,801,968
Highway Bridges	38 bridges	\$71,093,046
Railway Segments	14.57 miles	\$16,733,995
Railway Bridges	0 bridges	\$0
Water Distribution Lines	N/A	N/A
Gas Lines	N/A	N/A
Sewer Lines	N/A	N/A
Total Estimated Infrastructure Replacement Cost		\$193,629,009

**Table 9-17. Infrastructure Vulnerable to Dam Failure, Davis County**





**Map 9-9. Dam Failure Hazard, Davis County (Utah Division of Water Rights 2007)**

## 6. Problem Soils

### Hazard Profile

<i>Potential Magnitude</i>		<i>Catastrophic (&gt;50%)</i>	<i>Probability</i>		<i>Highly Likely</i>
		<i>Critical (25-50%)</i>			<i>Likely</i>
		<i>Limited (10-25%)</i>		X	<i>Possible</i>
	X	<i>Negligible (&lt; 10%)</i>			<i>Unlikely</i>
<i>Location</i>	See Map 9-10 (page 141).				
<i>Frequency</i>	Continuous.				
<i>Conditions</i>	Conditions vary by geologic formation.				
<i>Duration</i>	Minutes to Years.				
<i>Secondary Hazards</i>	Flooding (broken water pipes), fire (broken gas pipes).				
<i>Analysis Used</i>	Utah Geological Survey.				

### Description of Location and Extent

Problem soils are soils that present problems for buildings and other engineered structures. Three types of problems soils are present in Davis County – oolitic sands, limestone and peat bogs. Oolitic sands are found on the northwest shore of Antelope Island. Limestone karst structures are found in the Mueller Park area in the far southeastern portion of the county. Finally, peat bogs are found along the shores of the Great Salt Lake in Farmington Bay. All of these areas are thinly populated and pose little danger. See Map 9-10 for more information on the locations of problem soils in Davis County.

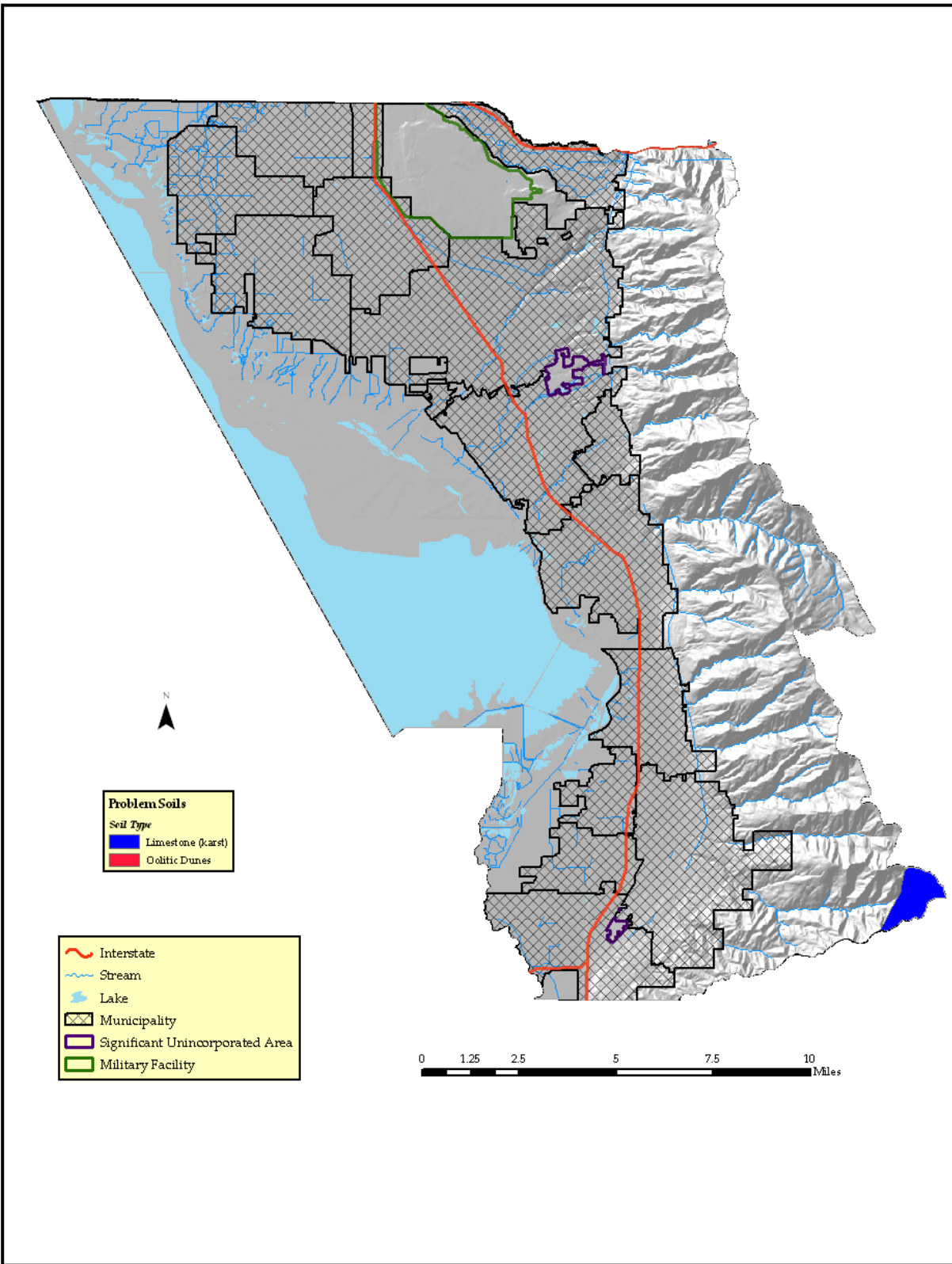
The oolitic sands on Antelope Island are on a public beach. Periods of flooding on the Great Salt Lake have eroded away much of the sands. The sands pose little threat to buildings, but can cover nearby roads at times.

Limestone karst structures are easily eroded by water and therefore often form caverns and crevices. If these caverns become large enough, the overlying ground can give way causing sink holes and other forms of subsidence. Structures directly over the karst structure have a high potential for collapse. Ground water contamination is also possible (Mulvey 1992). Fortunately, the karst structures in Davis County are located in remote areas.

Peat bogs are collections of dead and dying plants. Areas of this problem soil can experience subsidence and can be compressed easily (Mulvey 1992). Furthermore, these bogs can produce methane which is highly flammable.

### Vulnerability Assessment

Problem soils were found not to affect any population or infrastructure in Davis County. Therefore, no significant vulnerability exists.



**Map 9-10. Problem Soils Susceptibility, Davis County (Mulvey 1992)**

## Hazards and Future Development

Population Estimates									
County	2000 Pop (July 1)	2006 Pop (est.)	Absolute Change 2000-2006	% Change 2000-2006	AARC 2000-2006	Rank by 2000 Pop	Rank by Absolute Change	Rank by % Change	Rank by AARC
Davis County	240,204	282,217	16,634	23.2%	3.5%	3	3	8	8
Population by County and Multi-County District									
MCD/ County	1980	1990	2000	2010	2020	2030	2040	2050	AARC 2000-2050
Wasatch Front	941,172	1,104,356	1,389,252	1,665,238	1,966,372	2,207,282	2,429,057	2,654,682	1.3%
Davis County	146,540	187,941	240,204	304,502	352,320	382,219	404,170	424,177	1.2%
Households by County and Multi-County District									
MCD/ County	1980	1990	2000	2010	2020	2030	2040	2050	AARC 2000-2050
Wasatch Front	298,700	357,257	446,844	565,333	679,589	780,369	870,671	960,756	1.5%
Davis County	39,994	53,643	71,201	97,801	117,172	130,248	139,178	146,811	1.5%

**Table 9-18. Demographic and Economic Projections** (UPEC 2007, 2008) All statistics are based on July 1 snapshot. AARC = Average Annual Rate of Change

Davis County's population will continue to grow in the eastern and southern portions of the county where new development is occurring because housing and land values are slightly lower than nearby Salt Lake County (refer to Table 9-18). The Wasatch Mountain Range and the Great Salt Lake restrain development in Davis County. Therefore, new development is located along the I-15 corridor and in the foothills. Other development is occurring where farmland and agricultural lands used to be.

Those portions of the county that are near the Great Salt Lake are subject to high liquefaction in the event of an earthquake which poses a risk to incoming residents and new structures. One way for the county to mitigate the earthquake threat and its secondary risks is to continue to establish zoning ordinances and building codes that will recognize the threat and reduce it. Examples of more appropriate forms of land use along fault lines include "farms, golf courses, parks, and undeveloped open space" (UGS 1996).

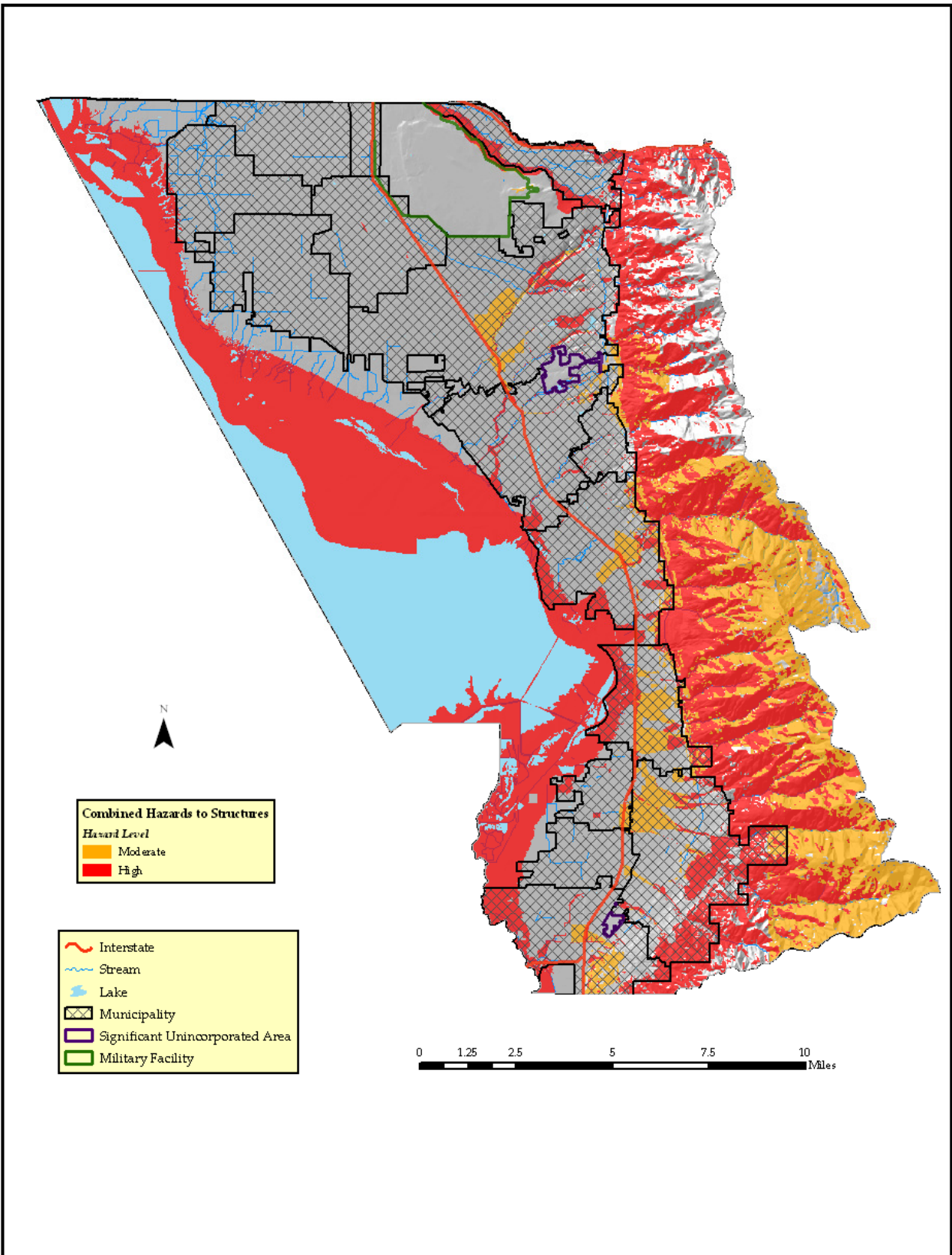
Wildfire risk is most severe in the foothills of northern Davis County. These areas, known as WUI zones, are most vulnerable due to the amount and types of vegetation and new structures that act as fuel to a burning fire. Some ways to mitigate this threat are to encourage communities to become "Fire Wise Communities", continue to require building and zoning codes and increase the public's awareness.

Landslide/slope failure is another threat near the foothills of the Wasatch Mountain Range. Much new development can be found near areas of current landslides. More detailed landslide studies and zoning appropriate for high hazard areas will decrease the likelihood of landslides damaging persons and property.

Flooding is of considerable concern along the Great Salt Lake and within alluvial fans along the foothills of the Wasatch Mountains. Much of the new development in Davis County is moving westward toward the lake and the 100-year floodplain. Zoning restrictions on building location and building codes that prevent basements would be well-suited in these areas.

Map 9-11 (page 144) shows the combined risk of nine structurally-threatening hazards (dam failure, earthquake, flood, landslide, lightning, problem soils, tornado, wildland fire and wind) in Davis County. The areas of high hazard (red) are areas of high landslide and flood risk as well as the “extreme” risk wildland fire areas. These areas are best preserved as open space to protect citizens from almost certain disasters. The moderate areas of the map (orange) are those areas having moderate or greater risk from five (5) or more structurally-threatening hazards. These areas should be preserved as open space if not already developed or hazard-appropriate development encouraged. If already developed, these areas should be the initial focus of education campaigns and for regulatory requirements of hazard mitigation techniques by residents.





**Map 9-11. Combined Hazards to Structures, Davis County**

## Mitigation Strategies

The Davis County Mitigation Strategies Working Group developed the following Mitigation Strategies. The Working Group revised and expanded on strategies implemented in the 2003 PDM Plan. Information on Working Group members can be found in Part III.

### Dam Failure

**Problem Identification:** Many high hazard dams and irrigation impoundments are located above inhabited areas in Davis County. "High hazard" does not mean that these dams have a high likelihood of failing, but that if they did fail, the magnitude of damage would be considerable. Additionally the Weber Basin water aqueduct traverses the county on the high bench along the Wasatch mountain front between the mouth of Weber Canyon and Bountiful. The aqueduct transports several thousands of gallons of water daily. Any event that caused a break in that water line would result in massive flooding, threatening many residents due to the fact that there are only manual valves in the system. Irrigation canals and associated secondary water distribution systems require regular inspection and maintenance.

**Goal #1 – Increase awareness of potential hazard from dams and water distribution systems in the county.**

**Objective 1.1 (Priority MEDIUM):** Educate public on water system/dam failure hazard.

*Action 1:* Compile inundation data/maps for high risk dams/irrigation impoundments

*Time Frame:* 5 years  
*Funding:* County/City Emergency Management, County/City Planners  
*Estimated Cost:* \$50,000  
*Staff:* Contracted  
*Jurisdictions:* Countywide

*Action 2:* Provide information to residents on the hazard.

*Time Frame:* 3 years  
*Funding:* County/City Emergency Management  
*Estimated Cost:* Unknown  
*Staff:* County/City Emergency Management  
*Jurisdictions:* Countywide

**Objective 1.2 (Priority MEDIUM):** Lessen the impacts of flood damage caused by irrigation system infrastructure failure.

*Action:* Inspect irrigation canals/debris basins

*Time frame:* 3 Years  
*Funding:* Weber Basin Water District, Federal Grants  
*Estimated Cost:* Unknown  
*Staff:* Weber Basin Water District, Weber-Davis Canal Co., Hooper Canal Co., Irrigation Districts  
*Jurisdictions:* Communities within Davis County down slope from Weber Basin Irrigation pipeline

## Earthquake

Problem Identification: Davis County is located in the heart of the Wasatch Fault between the shores of the Great Salt Lake and the foothills of the Wasatch Mountain Range. The majority of the population lives within 5 miles of the fault. The only major traffic artery runs north and south, and numerous water and petroleum pipelines either cross over or run within ½ mile of the fault. Five moderately sized petroleum refineries located in the southern end of the county are subject to severe damage from ground movement and liquefaction. A major earthquake in the area would result in hundreds of millions of dollars in damage to residential structures, industry, and of critical infrastructure, and likely some loss of life.

Goal #1 – *Reduce loss of life and limit damage to property.*

Objective 1.1 (Priority HIGH): Provide education on seismic hazards and mitigation, to Davis County residents and homeowners.

*Action:* Public Education

*Time Frame:* Ongoing  
*Funding:* County/City Emergency Management  
*Estimated Cost:* Minimal  
*Staff:* County/City Emergency Management  
*Jurisdictions:* Countywide

Objective 1.2 (Priority MEDIUM): Increase quality and quantity of available natural hazards data to facilitate better decision-making.

*Action:* Update fault zone and liquefaction maps for the county

*Time frame:* Ongoing  
*Funding:* Undetermined, potentially USGS or UGS  
*Estimated Cost:* Minimal  
*Staff:* UGS Staff  
*Jurisdictions:* Countywide

Problem Identification: A number of critical structures within the county do not meet current building criteria and could sustain considerable damage or suffer total destruction from ground shaking. This could delay life-saving rescue operations and hamper efforts to restore order in the event of a disaster.

Goal #2 – *Protect emergency response capabilities and critical facilities.*

Objective 2.1 (Priority HIGH): Ensure critical emergency service and water distribution facilities meet current construction codes, to allow for prompt response operations after an earthquake.

*Action:* Retrofit or construct new fire department facilities for earthquake resistant standards.

*Time Frame:* 3-5 Years  
*Funding:* Grants and city budgets  
*Estimated Cost:* Unknown  
*Staff:* Contract  
*Jurisdictions:* Countywide, targeting Clinton City, South Weber, and Layton City



*Action:* Retrofit high risk Weber Basin Water facilities including the Davis South water treatment plant filter building, well houses and nonstructural components District wide.

*Time Frame:* 2-5 Years  
*Funding:* FEMA PDM grants and WBWCD funds  
*Estimated Cost:* \$3,000,000  
*Staff:* WBWCD  
*Jurisdiction:* WBWCD

## **Flooding**

**Problem Identification:** Many citizens are not fully aware of the flood hazard in Davis County. Because of this, development has been allowed to occur in areas of previous flooding.

*Goal #1 – Educate citizens of Davis County about flood hazard.*

**Objective 1.1 (Priority HIGH):** Increase the level of understanding in homeowners, city officials, permit authorities and title companies/realtors.

*Action:* Create a brochure about flood hazard and disseminate

*Time Frame:* Immediate  
*Funding:* County Budget  
*Estimated Cost:* Minimal  
*Staff:* County/City Emergency Management, Storm Water Coalition  
*Jurisdictions:* Countywide

**Objective 1.2 (Priority HIGH):** Reduce loss of life and property damage due to flooding by providing current building code and NFIP maps to cities.

*Action:* Encourage city planners to update building codes

*Time Frame:* Immediate  
*Funding:* None  
*Estimated Cost:* 0  
*Staff:* County Planning Staff  
*Jurisdictions:* Countywide

**Problem Identification:** Debris basins and other flood control infrastructure require regular inspection and maintenance. Stream channels may also change with heavy flow events. Proper flood control measures should be an ongoing priority.

*Goal #2 – Reduce flood hazard*

**Objective 2.1 (Priority HIGH):** Increase the capacity of streams to better handle runoff.

*Action:* Clean/maintain stream channels

*Time frame:* 5-20 Years

*Funding:* General fund, bond measure

*Estimated Cost:* \$50,000,000

*Staff:* Davis County Public Works

*Jurisdictions:* Countywide

Problem Identification: Flooding in Davis County often occurs rapidly. For citizens to adequately protect themselves against the threat, sufficient warning needs to be given.

Goal #3 – *Increase warning lead times to reduce the vulnerability of persons and property to flood hazards.*

Objective 3.1 (Priority MEDIUM): Quickly notify persons of flood event.

*Action:* Implement a flood notification system.

*Time frame:* 5 Years

*Funding:* General Funds, Federal Grants

*Estimated Cost:* \$50,000

*Staff:* Public Works

*Jurisdictions:* Countywide

Objective 3.2 (Priority MEDIUM): Establish a county-wide warning/notification system.

*Action:* Improve on the existing “reverse 911” warning system.

*Time Frame:* 2 Years

*Funding:* City/County Budget

*Estimated Cost:* Unknown

*Staff:* Emergency Management

*Jurisdictions:* Countywide

## **Severe Weather**

Problem Identification: Most presidential disaster declarations are the result to severe weather. Davis County is prone to the affects of severe weather as are many other counties in the state. These are usually thunderstorms and snowstorms. However, we are also prone to extremely severe wind events referred to as “East Winds.” Historically, Davis County has experienced gusts of over 110 mph and sustained winds of 80+ mph. These can result in millions of dollars in damage. On average we experience at least one every year. Severe storms result in secondary and tertiary problems mostly dealing with power, heating and travel. Severe weather has resulted and will continue to result in serious travel problems, as well as power and heating difficulties.

Goal 1 – *Assist residents protect themselves from the affects of severe weather.*

Objective 1.1 (Priority HIGH): Support programs to prepare residents for adverse weather conditions.

*Action 1:* Encourage all cities to participate in the Storm Ready program.

*Time Frame:* 1 Year  
*Funding:* City and county budgets  
*Estimated Cost:* Minimal  
*Staff:* City/County Emergency Managers  
*Jurisdictions:* Countywide

*Action 2:* Encourage avalanche preparedness for county backcountry users.

*Time Frame:* 1 Year  
*Funding:* Minimal  
*Estimated Cost:* Minimal  
*Staff:* City/County Emergency Managers, State Hazard Mitigation Team, Utah Avalanche Forecast Center  
*Jurisdictions:* Countywide

*Action 3:* Install avalanche warning signs in Farmington Canyon.

*Time Frame:* 1 Year  
*Funding:* Unknown  
*Estimated Cost:* \$100  
*Staff:* County Emergency Managers  
*Jurisdictions:* County

Problem Identification: Davis County cities near the mountain front are subject to strong easterly canyon winds. These high winds can result in serious disruption of essential public services and communications for emergency responders have been severely hampered in the past by high wind damage to communication infrastructure.

*Goal 2 – Ensure communication during severe weather events.*

Objective 2.1 (Priority MEDIUM): Harden communications capabilities to ensure post event functionality.

*Action:* Reinforce towers and infrastructure.

*Time Frame:* 2 Years  
*Funding:* To be determined  
*Estimated Cost:* Unknown  
*Staff:* UCAN, city and county personnel  
*Jurisdictions:* Countywide

## **Slope Failure**

Problem Identification: Numerous canyons, large and small exist along the east bench of Davis County. They were formed over thousands of years by debris flows and mudslides. Now, many hundreds of homes and other structures, pipelines, power lines and roadways have been constructed on top of or through the alluvial fans produced by these events. Nature continues to construct these canyons. Landslides and debris flows will continue to occur over time, thus threatening residents and critical infrastructure.

*Goal 1 – Avoid risk or exposure to landslides through informed planning and zoning decisions.*

Objective 1.1 (Priority HIGH): Educate planning commissions.

*Action 1:* Provide city-planning commissions with information concerning landslides and debris flows.

*Time Frame:* Ongoing  
*Funding:* None  
*Estimated Cost:* 0  
*Staff:* County/community staff  
*Jurisdictions:* Countywide

*Action 2:* Encourage cities to adopt a standard of requiring geo-technical studies in identified landslide and debris flow areas.

*Time frame:* 5 years  
*Funding:* None  
*Estimated Cost:* 0  
*Staff:* LEPC members  
*Jurisdictions:* Countywide

Problem Identification: There are a number of canyons that do not currently have debris basins constructed to contain debris flows. Others are insufficient in size. These need to be built or reconstructed in order to provide protection to residents.

Goal 2 – *Reduce or eliminate landslide damage due to debris flows.*

Objective 2.1 (Priority MEDIUM): Reduce loss of life and damage to property by providing a means to control debris and water from debris flows.

*Action 1:* Construct additional debris basins and retrofit others.

*Time Frame:* 5 Years  
*Funding:* Federal grants, County funding, City funding  
*Estimated Cost:* \$10 million  
*Staff:* County public works, city public works, contractors  
*Jurisdictions:* Countywide jurisdictions, Centerville City and future developments on alluvial fans in Davis County.

*Action 2:* Rehabilitate watershed areas affected by wildfire.

*Time Frame:* Ongoing/as needed  
*Funding:* Federal grants (NRCS, USFS)  
*Estimated Cost:* Unknown  
*Staff:* County public works, USFS  
*Jurisdictions:* County

Objective 2.2 (Priority MEDIUM): Lessen the impacts of flood damage caused by irrigation canal failure.

*Action:* Place check valves in the Weber Basin irrigation pipeline.

*Time frame:* 3 Years

*Funding:* Weber Basin Water District, Federal Grants

*Estimated Cost:* \$400,000

*Staff:* Weber Basin Water District, Contractors

*Jurisdictions:* Communities with in Davis County down slope from Weber Basin Irrigation pipeline

## **Wildland Fire**

**Problem Identification:** Much of the inhabitable land within Davis County is on the east bench. Numerous homes and subdivisions have been and are being constructed in these areas. Many of these structures border the Forest Service boundary or are in areas of old scrub oak growth. The potential for catastrophic damage from wildfire increases yearly. High voltage power lines in the Farmington bench area prevent firefighting helicopters from the ability to draw fire suppression water from irrigation reservoirs

**Goal #1 – Reduce or eliminate the threat of a wildfire, resulting in loss of life and property.**

**Objective 1.1 (Priority HIGH):** Increase the level of wildfire knowledge for home and business owners in the Urban Wildland Interface area.

*Action 1:* Public awareness and education

*Time Frame:* Immediate

*Funding:* LEPC

*Estimated Cost:* \$0

*Staff:* LEPC membership, UFFSL, National Forest Service

*Jurisdictions:* Wildland/Urban Interface (WUI) communities

*Action 2:* Provide wildfire training to city and county planning and zoning officials and staff

*Time Frame:* Immediate

*Funding:* LEPC

*Estimated Cost:* \$0

*Staff:* LEPC membership, UFFSL, DHLS, National Forest Service

*Jurisdictions:* WUI communities

**Objective 1.2 (Priority HIGH):** Maintain fire breaks

*Action:* Routinely maintain fire breaks in preparation for wildfire season

*Time Frame:* Ongoing

*Funding:* WUI Cities, County

*Estimated Cost:* Unknown

*Staff:* Public Works of respective county/cities

*Jurisdictions:* WUI Cities, County

**Objective 1.3 (Priority HIGH):** Provide firefighting helicopter access to irrigation reservoirs in the Farmington bench area

*Action:* Relocate high voltage power lines in the Farmington bench area

*Time Frame:* Immediate

*Funding:* Federal, State, Private Sector

*Estimated Cost:* \$600,000

*Staff:* Fire Department

*Jurisdictions:* Farmington City

Problem Identification: Given that wildfire is a hazard that can be managed through effective fuel control and the lack of defensible space in one home could threaten other homes nearby in subdivisions, ordinances requiring residents to maintain defensible space around their respective homes would greatly reduce the fire hazard in these areas. Programs could be established to assist residents in performing this requirement or to encourage rebates for property insurance.

*Goal #2 – Require homeowners to maintain defensible space around homes and businesses to more effectively mitigate the wildfire hazard.*

Objective 2.1 (Priority HIGH): Establish ordinances requiring the maintenance of defensible space by homeowners, businesses, and government

*Action 1:* Draft ordinance requiring defensible space

*Time Frame:* 1 year

*Funding:* Local

*Estimated Cost:* Minimal

*Staff:* Emergency Service, County/City Attorney, County City Councils

*Jurisdictions:* WUI Communities

*Action 2:* Educate citizens about new defensible space requirement

*Time Frame:* 1 year

*Funding:* Local

*Estimated Cost:* Minimal

*Staff:* Emergency Service, City/County Fire

*Jurisdictions:* WUI Communities

Objective 2.2 (Priority HIGH): Establish program to assist/encourage homeowners in creating/maintaining defensible space.

*Action:* Start a bi-yearly effort to help homeowners create defensible space through yard waste removal and trimming assistance.

*Time Frame:* 1-2 years

*Funding:* Local

*Estimated Cost:* Unknown

*Staff:* Emergency Service, City/County Fire, Public Works

*Jurisdictions:* WUI Communities